



Dart Aerospace Ltd.
1270 Aberdeen St.
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200
Fax 613 632-5246

PRELIMINARY ISSUE

DAS
9
9-89

D5609-1

Job Sheet 182096

Accounting Job RD17-1048-01



Part Weight: 0 lbs

Job Created: 8/17/18

Due Date: 8/24/18

Type: R+D

Note: D5609 REV.A9 IPP REV:A 18.06.20 NEW ISSUE DD VERF:JFS

Ship Via:

Part No: D5609-1

Part Name: EC130 Fwd Crosstube

Status: Scheduled

Priority: Medium

Job Tracking No:

Created By: Marie Lajeunesse

Description:

POSITIVE RECALL

EFFECTIVE 17 2018 AUTH 21

RELEASED 9 2018 DATE 15-10-2018 Rev A

9-89

Bill of Materials

Job Routing

Op No	Operation	Qty	Start Date	Due Date	Standard		Workcenter/Supplier		Sign-off
					Setup hrs	Run Hrs	Workcenter / Supplier	Lead Time	
110	Purchasing	8 pcs		8/24/18	0.00	0.00	Purchasing		SEP 18 2018
120	Packaging	8 pcs		8/24/18	0.00	0.00	Packaging2		SEP 18 2018
130	QC	8 pcs		8/24/18	0.00	0.00	QC6		61 38 9-89
140	Packaging	8 pcs		8/24/18	0.00	0.00	Packaging3-1		SEP 19 2018
150	QC21-FG	8 Ea		8/24/18	0.00	0.00	QC21		SEP 19 2018

Part Op 110 - Issue P/O to Parker Fab: PO 40303 Manufacture D5609-1 as per dwg (Bend, Remove excess material after Descriptions: bending) **Ship extrusion D6029-120***AS PER DWG NOTE 10, EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS.*** Material release note is required
120 - Ensure material release note is attached

Job BOM

Part / Item	Component Name	Quantity	Operation	Container
D6029-120	Tube, Seamless	0 Ea (1 ea)	110-Purchasing	S111210
D5609-1P	EC130 Fwd Crosstube	0 pcs (1 ea)	120-Packaging	S111209

Job Allocations

Operation	Component Part	Required	Inventory	Allocated
110-Purchasing	D6029-120	0	31	0
120-Packaging	D5609-1P	0	0	0

Part Specifications

Specifications could not be found.



Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
CANADA
TEL.: 1 613 632-5200
Email: sales@dartaero.com
www.dartaerospace.com

Plex 8/17/18 10:18 AM Dart.lajeunesse.marie

Container No: S111212



Part: D5609-1

Job No: 182096

Serial No/Batch: S111212

Revision: A9

Inspector:

Exp Date:

Instructions:

Date: 09/18/18

DQA: _____ Date: _____

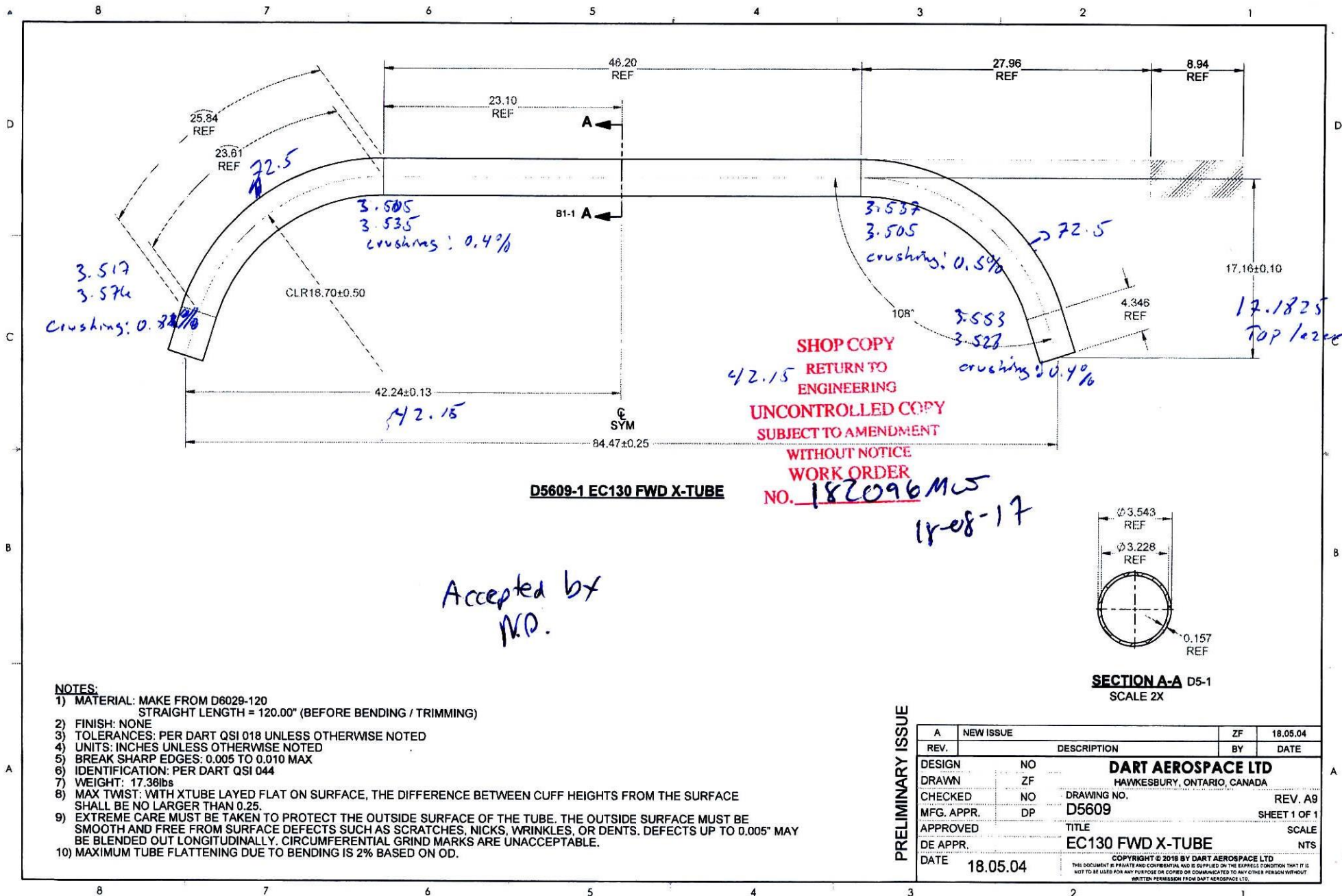
WORK ORDER NON-CONFORMANCE / UPDATE



QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Cross tube ☐ Water Jet ☐ Engineering ☐ Machining ☐ Small Fab ☐ Prod. Eng. Coord. ☐ Quality ☐ Thermoforming ☐ Finishing ☐ Rec/Store/Packaging ☐ Other ☐ Large Fab ☐ Composite ☐ Supplier ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval		
Description Work Order Deviation				Disposition				Completed By	
								Lead hand / Supervisor Approval Verification	
								QC / QA Coordinator Approval	
Root Cause Environment ☐ No Re-verification ☐ Design ☐ Operator ☐ Doc/Data ☐ Offset/Setup ☐ Equip/Tooling ☐ Supplier ☐ Handling/Pre ☐ Training ☐ Material ☐ Use for Testing ☐ Internal Transport ☐ Poor Information ☐ Tribal Knowledge ☐ Rushing ☐ LOA ☐ Product Improvement ☐ Substation ☐ Process Improvement ☐ Past Expiry Date ☐ Manufacturing Process ☐ Misidentified ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Temperature/Cure ☐ Power Loss/Surge ☐ Positioned Wrong ☐ Bending ☐ Set-up ☐ Folio/Program ☐ Outside Dimensions ☐ Centre Not Concentric ☐ BOM/Route ☐ Grain ☐ Over/Under tolerance ☐ Cracks ☐ Broken/Damage/Defect ☐ Weld ☐ Part Incorrect ☐ Crimp/Kink/Ripple/Wave ☐ Inspection Incomplete/Unqualified ☐ Wrong Stock Pulled ☐ Part Lost/Missing ☐ Cuffs ☐ Contamination ☐ Out of Sequence ☐ Part Moved ☐ Crushing ☐ Countersink ☐ Off-set ☐ Drawing ☐ Heat Treat ☐ Cut Too Short ☐ Misabeled ☐ Finish ☐ Wave/Twist in Tube ☐ Instructions Incomplete/Unclear ☐ Fit/Function ☐ Misread ☐ Marks/Chatter ☐ Drill Holes ☐ Misaligned/off center ☐ Turning Sequence ☐							
OTHER :									



PRELIMINARY ISSUE

A	NEW ISSUE		ZF	18.05.04
REV.	DESCRIPTION		BY	DATE
DESIGN	NO	DART AEROSPACE LTD		
DRAWN	ZF	HAWKESBURY, ONTARIO, CANADA		
CHECKED	NO	DRAWING NO.	REV. A	
MFG. APPR.	DP	D5609	SHEET 1 OF	
APPROVED	TITLE		SCALE	
DE APPR.	EC130 FWD X-TUBE		NTS	
DATE	18.05.04	COPYRIGHT © 2018 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.		

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval		
Description Work Order Deviation				Disposition				Completed By	
								Lead hand / Supervisor Approval Verification	
								QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY							
Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐	No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐	Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐	Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐	Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐	OTHER : _____			



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

PURCHASE ORDER **PO040303**

Supplier: PAR005-VU
Parker Fabrication Inc
501 East Courtland
Morton, IL 61550-9043 USA
Phone: 309-266-8413
Fax: 309-266-7231

Ship To: 1270 Aberdeen Street
Hawkesbury
ON
K6A 1K7 Canada
Phone: 613-632-5200

PO No: PO040303
PO Date: 6/22/18
Due Date: 9/18/18
Purchase Order Revision: 2
Revision Date: 9/13/18
Ship-To Contact: Hemmerich, Steven
Phone: 613-632-5200 Ext: 281
shemmerich@dartaero.com
Pynt Terms: Net 30
Freight Terms: Collect
Special Comments:

Items

Line Item	Job	Part	Supplier Part No	Item No	Description	Status	Account	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (USD)	Extended Price
1		D5611-1P			EC130 Skidtube First Article Inspection. Expedite charges included in price. Forward quality docs to buyer prior to shipment	Firmed	-	9/18/18	1 pcs	0 pcs	1 pcs	\$502.75/pcs	\$502.75
IX SEP 18 2018													
Line Item Note Advance notice required for Quality audit.													
IX	SEP 18 2018			w/o183181	Firmed	-		9/18/18	1 pcs	0 pcs	1 pcs	\$502.75/pcs	\$502.75
IX	SEP 18 2018			w/o183182	Firmed	-		9/18/18	1 pcs	0 pcs	1 pcs	\$502.75/pcs	\$502.75
IX	SEP 18 2018			w/o183183	Firmed	-		9/18/18	1 pcs	0 pcs	1 pcs	\$502.75/pcs	\$502.75
IX	SEP 18 2018			w/o183184	Firmed	-		9/18/18	1 pcs	0 pcs	1 pcs	\$502.75/pcs	\$502.75
IX	SEP 18 2018			w/o183185	Firmed	-		9/18/18	1 pcs	0 pcs	1 pcs	\$502.75/pcs	\$502.75
IX	SEP 18 2018			w/o183186	Firmed	-		9/18/18	1 pcs	0 pcs	1 pcs	\$502.75/pcs	\$502.75
IX	SEP 18 2018			w/o183187	Firmed	-		9/18/18	1 pcs	0 pcs	1 pcs	\$502.75/pcs	\$502.75
Sub Total:									8	0	8	\$4,022.00	



Dart Aerospace Ltd.
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Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

PURCHASE ORDER **PO040303**

Items

Line Item	Job	Part	Supplier Part No	Item No	Description	Status	Account	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (USD)	Extended Price
2		D5609-1P			EC130 Fwd Crosstube First Article Inspection. Expedite charges included in price. Forward quality docs to buyer prior to shipment	Firmed	-	8/31/18	1 pcs	0 pcs	1 pcs	\$723.26/pcs	\$723.26
					w/o 182096								

1X SEP 18 2018

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Line Item Note Advance notice required for Quality audit.

1X SEP 18 2018	w/o 182093	Firmed	-	9/18/18	1 pcs	0 pcs	1 pcs	\$723.26/pcs	\$723.26
1X SEP 18 2018	w/o 182094	Firmed	-	9/18/18	1 pcs	0 pcs	1 pcs	\$723.26/pcs	\$723.26
1X SEP 18 2018	w/o 182095	Firmed	-	9/18/18	1 pcs	0 pcs	1 pcs	\$723.26/pcs	\$723.26
Sub Total:					4	0	4		\$2,893.04

Grand Total: \$6,915.04

Order Notes

Terms & Condition of Purchasing(Suppliers) and Procurement Quality Clauses are an integral part of our AS9100 requirements. To learn in detail, please visit www.dartaerospace.com for further explanation.

Plex 9/14/18 10:59 AM dart.hemmerich.steven



Parker Fabrication, Inc.
501 East Courtland
Morton, IL 61550-9043

Ph: 309.266.8413

Fax: 309.266.7231

2 of 2

Pack List

Number: **119663**

Date: 17-Sep-18

Dart Aerospace
1270 Aberdeen St
Hawkesbury, ON K6A 1K7
Canada

Ship To

Steven Hemmerich
Dart Aerospace
1270 Aberdeen St
Hawkesbury, ON K6A 1K7
Canada

Ph: 1 613 632-5200

Ph: 1 613 632-5200

Ship Via

Freight Collect

Quantity	Description	Rev:
8 ca	Part: EC130SKID EC130 Skidtube rev. A10	
	SO: 69748	PO: PO040303 Line: 001
4 ca	Part: EC130FWD EC130 Fwd X Tube rev. A9	
	SO: 69748	PO: PO040303 Line: 002
Thank you for your business!		

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Certificate of Conformance (CoC)

Form F-4003
Page 1 of 1
Last Revised:
3/09/2018

Supplier Name: Parker Fabrication
Supplier Number: _____
Part Description: EC130 FWD X-Tube

Part Number: D5609
Drawing Number: D5609

Revision: A9

Purchase Order #: PO040303

Quantity: 4

Serial Number(s): 207295

Lot/Heat Number: S078753

(if applicable)

(if applicable)

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All technical requirements of the contract are satisfied. Quality and performance are in accordance with the contract, the specifications, and all references and associated contractual drawings and documents.

I, as a supplier to Dart Aerospace LTD, acknowledge and certify the material covered under this document is produced in accordance with the following:

- ☒ All Contractual "Flow Down" Requirements
- ☒ Supplier Standards Guide
- ☒ Global Supplier Quality Manual
- ☒ Product Conformance
- ☒ Free of Counterfeit Material

(Acknowledge by marking the boxes)



Signature

Quality Manager

Title

9/17/2018

Completion Date

This certifies the parts/items/materials identified above conform to all applicable drawings and/or specifications as evidenced by reports or other documentation on file and all other purchase order and quality requirements have been met.

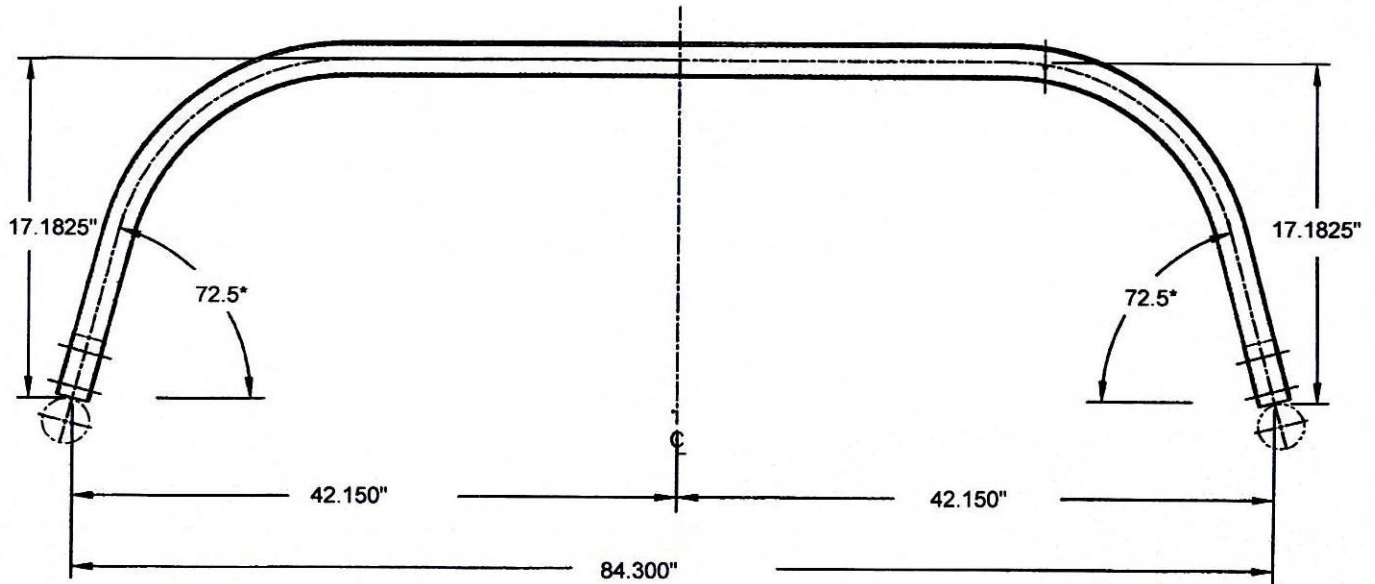
Production Part Approval Dimensional Test Results

[illegible]

DART AEROSPACE LTD		Work Order:	
		Serial Number	
Description: EC 130 FWD Cross Tube		Part Number:	D5609-1
Inspection Dwg: D5609	Rev: PA9		Page 2 of 2

Required Dimension	Min	Max
Height	17.06"	17.26"
1/2 Span	42.11"	42.37"
Angle	71°	73°
Total Span	84.22"	84.72"

✓ 10/9/24 Acceptable per Rev. A



Measured by: DPZ	Checked by: RB	QC Inspector: DAS
Date:	Date: 18-09-19	Date: 9-89 2018/02/18

Engineering Approval: (If necessary)	✓	Date: 10/9/24
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Rev	Date	Change	Revised by	Approved
A	18/09/20	New Issue	ED	

DART AEROSPACE LTD		Work Order:	182096
		Serial Number	S111212
Description: EC 130 FWD Cross Tube		Part Number:	D5609-1
Inspection Dwg: D5609		Rev: PA9	
		Page 1 of 2	

Parker Fab - PO040303 TUBE #4

INSPECTION SHEET

WALL THICKNESS MEASUREMENTS

LOCATION FROM CL	DWG DIM	R1	R2	R3	R4				
CL	0.157"								
21"	0.157"								
21"	0.157"								
CENTER OF BEND	0.157"								
CENTER OF BEND	0.157"								

OUTSIDE DIAMETER MEASUREMENTS

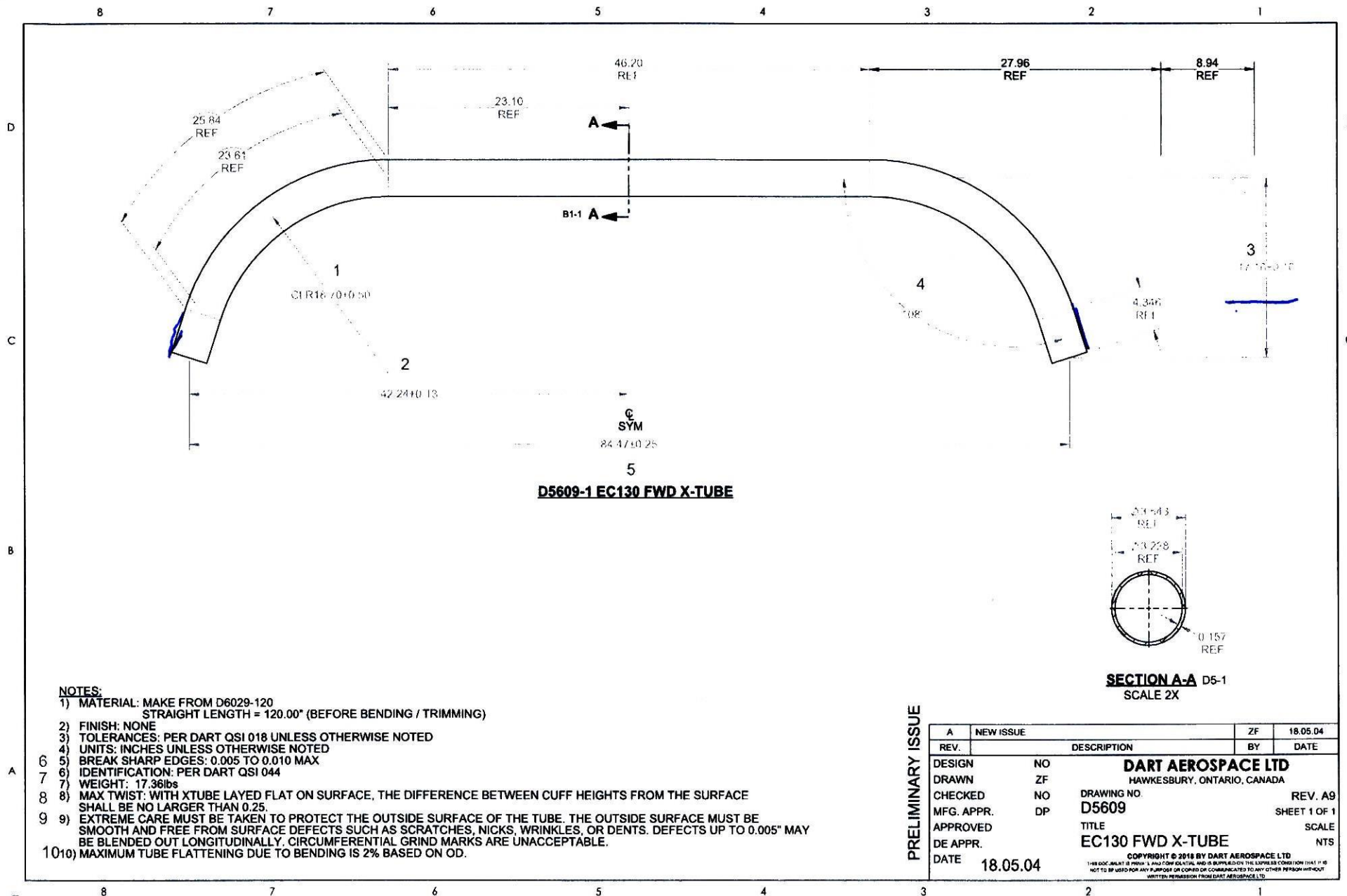
LOCATION	DWG DIM	M1	M2				
CL	3.543"						
CENTER OF BEND	3.543"						
CENTER OF BEND	3.543"						

CRUSHING

MAX 2%	SIDE A	SIDE B
Top of Bend	0.4%	0.5%
Bottom of Bend	0.8%	0.4%

TWIST

	SIDE A	SIDE B
MAX 0.25"		



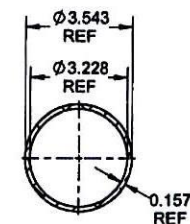
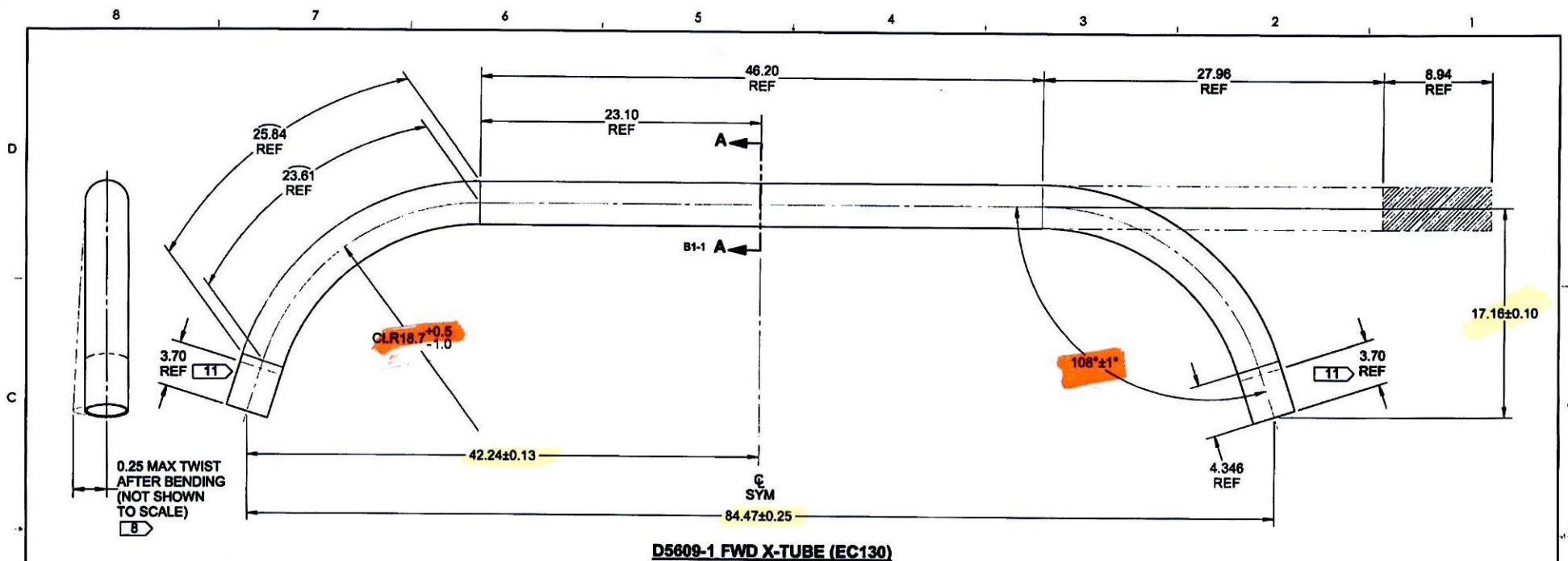
NOTES:

- 1) MATERIAL: MAKE FROM D6029-120
STRAIGHT LENGTH = 120.00" (BEFORE BENDING / TRIMMING)
- 2) FINISH: NONE
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: PER DART QSI 044
- 7) WEIGHT: 17.36lbs
- 8) MAX TWIST: WITH XTUBE LAYED FLAT ON SURFACE, THE DIFFERENCE BETWEEN CUFF HEIGHTS FROM THE SURFACE SHALL BE NO LARGER THAN 0.25.
- 9) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, WRINKLES, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 10) MAXIMUM TUBE FLATTENING DUE TO BENDING IS 2% BASED ON OD.

PRELIMINARY ISSUE

A		NEW ISSUE		ZF	18.05.04
REV.		DESCRIPTION		BY	DATE
DESIGN	NO	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA DRAWING NO. D5609 TITLE EC130 FWD X-TUBE COPYRIGHT © 2018 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.			
DRAWN	ZF				
CHECKED	NO				
MFG. APPR.	DP				
APPROVED					
DE APPR.					
DATE	18.05.04				

A



SECTION A-A D5-1
SCALE 2X

RELEASED

2018 OCT 02
ECN 18-017

NOTES:

- 1) MATERIAL: MAKE FROM D6029-120
STRAIGHT LENGTH = 120.00" (BEFORE BENDING / TRIMMING)
- 2) FINISH: CHEMICAL CONVERSION COAT EXTRUSION PER DART QSI 005 4.1 PRIOR TO SENDING EXTRUSION TO OUTSIDE VENDOR
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: PER DART QSI 044 6.1
- 7) WEIGHT: 17.38lbs
- 8) MAX TWIST: WITH XTUBE LAYED FLAT ON SURFACE, THE DIFFERENCE BETWEEN CUFF HEIGHTS FROM THE SURFACE SHALL BE NO LARGER THAN 0.25.
- 9) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, WRINKLES, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 10) MAXIMUM TUBE FLATTENING DUE TO BENDING IS 2% BASED ON OD.
- 11) CHECK MIN ID USING TOOL DT10434 FOR 3.70 LENGTH.

APPROVED

A NEW ISSUE		ZF 18.05.04	
REV.	DESCRIPTION	BY	DATE
DESIGN	NO	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	ZF		
CHECKED	MW	DRAWING NO.	REV. A
MFG. APPR.	JFS	D5609	SHEET 1 OF 1
APPROVED	NO	TITLE	SCALE
DE APPR.	CP	FWD X-TUBE (EC130)	NTS
DATE	18.05.04	COPYRIGHT © 2018 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR REPRODUCED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	